Amendments to the Claims:

Please amend claims 1-2, and 4-16 as follows.

This listing of claims replaces all prior versions, and listings, of claims in the application.

Listing of claims:

1. (currently amended) An optical transmission system for compensating for transmission loss, comprising:

a transmitting apparatus for serializing a plurality of n-bit channel data, where n is a natural number, received from an external source, in response to a predetermined clock signal, converting the serialized channel data into a first current signal and converting the predetermined clock signal into a second current signal, the magnitudes of the first current signal and second current signal being modulated in accordance with corresponding first and second transmission loss compensation signals decoded from an error detection signal received from a remote receiving apparatus, and outputting first and second optical signals having respective first and second optical output power levels corresponding to the respective magnitudes of the first and second current signals;

first and second transmission optical fibers for transmitting the first and second optical signals;

a receiving apparatus for recovering the n-bit channel data and the predetermined clock signal from the first and second optical signals received through the first and second transmission optical fibers, detecting first and second transmission loss in each of the first and second optical signals as a result of their transmission and reception to generate first and second transmission loss signals, encoding the first and second transmission loss signals to generate an encoded transmission loss signal, and optically converting the encoded transmission loss signal as the error detection signal; and

a ~~second~~ return optical fiber for transmitting the error detection signal to the transmitting apparatus.

2. (currently amended) The optical transmission system of claim 1, wherein the transmitting apparatus comprises:

a first phase locked loop (PLL) for generating a clock signal synchronized with the predetermined clock signal as a first synchronized clock signal;

a parallel/serial data converter for receiving the plurality of n-bit channel data in response to the first synchronized clock signal and serializing the n-bit channel data in response to the first synchronized clock signal to provide the serialized n-bit channel data;

a receiver optical diode for receiving and converting the error detection signal transmitted from the ~~second~~ return optical fiber into an error detection current signal;

an error compensating ~~optical~~ driver for converting the serialized n-bit channel data and the first synchronized clock signal into the first and second current signals respectively, converting the error detection current signal into a digital error compensation signal, decoding the first and second transmission loss compensation signals from the digital error compensation signal, modulating the magnitudes of the first and second current signals in accordance with the corresponding first and second transmission loss compensation signals, and outputting the modulated first and second current signals as first and second driving signals; and

first and second transmitting optical diodes for outputting the first and second optical signals having optical output powers corresponding to the first and second driving signals.

3. (original) The optical transmission system of claim 2, wherein the parallel/serial data converter comprises:

a data latch for receiving the n-bit channel data and segmenting and latching the n-bit channel data by N (N is a natural number) bits in response to first through m (m is a natural number) th latch clock signals; and

a data serializer for performing a logic operation on the n-bit channel data latched by the data latch, first through nth non-overlapping clock signals, and inverted first through nth non-overlapping clock signals and outputting the logic operation result as the serialized channel data,

wherein the first through nth non-overlapping clock signals are generated by the phase locked loop (PLL) and have a predetermined offset so as not to overlap each other.

4. (currently amended) The optical transmission system of claim 2, wherein the error compensating ~~optical~~ driver comprises:

an ~~optical~~ error detection receiver for receiving the error detection current signal and converting the received error detection current signal into a digitized error compensation signal;

a transmission ~~loss~~ error compensator for recovering first and second transmission loss data signals corresponding to the transmission loss occurring in the transmission of the first and second optical signals from the error compensation signal in response to the first synchronized clock signal, analog converting the recovered first and second transmission loss data signals to provide the first and second transmission loss compensation signals; and

a plurality of ~~optical~~ signal drivers for converting the serialized n-bit channel data and the first synchronized clock signal into the first and second current signals, modulating the magnitudes of the converted first and second current signals in response to the corresponding first and second transmission loss compensation signals, and outputting the modulated first and second current signals as the first and second driving signals.

5. (currently amended) The optical transmission system of claim 1, wherein the receiving apparatus comprises:

first and second optical receiver diodes for receiving optical signals transmitted through the first and second transmission optical fibers and converting the received optical signals into received current signals;

an error detection ~~optical receiver~~ unit for converting the received current signals converted by the first and second optical receiver diodes into voltage signals, digitizing the voltage signals into digital signals, and providing the digital signals as received serial n-bit channel data and a recovered clock signal, detecting transmission loss in the received signals from the voltage signals as the first and second transmission loss signals, encoding the first and second transmission loss signals as the encoded transmission loss signal, and converting the encoded transmission loss signal into an encoded transmission loss current signal;

a second PLL for generating a second synchronized clock signal synchronized with the recovered clock signal;

a data recovery unit for recovering the received recovered serial n-bit channel data to n-bit parallel data in response to the second synchronized clock signal; and

an optical feedback diode for transmission for optically transmitting the error detection signal to the transmitting apparatus via the ~~third~~ return optical fiber in response to the encoded transmission loss current signal.

6. (currently amended) The optical transmission system of claim 5, wherein the error detection ~~optical receiver~~ unit comprises:

first and second ~~optical~~ signal receivers for converting the current signals converted by the plurality of first and second optical receiver diodes into voltage signals, outputting the voltage signals, digitizing the voltage signals into the digital signals, and providing the digital signals as the received serial n-bit channel data and the recovered clock signal;

a transmission ~~loss~~ error detector for detecting the transmission loss in the received signals from the voltage signals, and encoding the first and second transmission loss signals in response to the second synchronized clock signal; and

an ~~optical~~ error detection signal driver for receiving the encoded transmission loss signal, converting the encoded transmission loss signal into the encoded transmission loss current signal, and providing the encoded transmission loss current signal to the optical feedback diode for transmission.

7. (currently amended) An optical transmission system for compensating for transmission loss, comprising:

a transmitting apparatus for serializing a plurality of n-bit channel data received from an external source, in response to a predetermined clock signal, converting the serialized channel data into a first current signal and converting the predetermined clock signal into a second current signal, the magnitudes of the first current signal and second current signal being modulated in accordance with corresponding first and second transmission loss compensation signals decoded from an error detection signal received from a remote receiving apparatus, and outputting first and second optical signals having respective first and second optical output

power levels corresponding to the respective magnitudes of the first and second current signals;

first and second transmission optical fibers for transmitting the first and second optical signals;

a receiving apparatus for recovering the n-bit channel data and the predetermined clock signal from the first and second optical signals received through the first and second transmission optical fibers, detecting first and second transmission loss in each of the first and second optical signals as a result of their transmission and reception to generate first and second transmission loss signals, and encoding the first and second transmission loss signals to generate an encoded transmission loss signal as the error detection signal; and

an electrical transmission line for transmitting the error detection signal to the transmitting apparatus.

8. (currently amended) The optical transmission system of claim 7, wherein the transmitting apparatus comprises:

a first phase locked loop (PLL) for generating a clock signal synchronized with the predetermined clock signal as a first synchronized clock signal;

a parallel/serial data converter for receiving the plurality of n-bit channel data in response to the first synchronized clock signal and serializing the n-bit channel data in response to the first synchronized clock signal, to provide the serialized n-bit channel data;

an error compensating ~~optical~~ driver for converting the serialized n-bit channel data and the first synchronized clock signal into the first and second current signals respectively, converting the error detection current signal into a digital error compensation signal, decoding the first and second transmission loss compensation signals from the digital error compensation signal, modulating the magnitudes of the first and second current signals in accordance with the corresponding first and second transmission loss compensation signals, and outputting the modulated first and second current signals as first and second driving signals; and

first and second transmitting optical diodes for outputting the first and second optical signals having optical output powers corresponding to the first and second driving signals.

9. (currently amended) The optical transmission system of claim 8, wherein the error compensating ~~optical~~ driver comprises:

a transmission ~~loss~~ error compensator for recovering first and second transmission loss data signals corresponding to the transmission loss occurring in the transmission of the first and second optical signals from the error detection signal in response to the first synchronized clock signal, analog converting the recovered first and second transmission loss data signals, to provide the first and second transmission loss compensation signals; and

a plurality of ~~optical~~ signal drivers for converting the serialized n-bit channel data and the first synchronized clock signal into the first and second current signals, modulating the magnitudes of the converted first and second current signals in response to the first and second transmission loss compensation signals, and outputting the modulated first and second current signals as the first and second driving signals.

10. (currently amended) The optical transmission system of claim 7, wherein the receiving apparatus comprises:

first and second optical receiver diodes for receiving optical signals transmitted through the first and second transmission optical fibers and converting the received optical signals into received current signals;

an error detection ~~optical receiver~~ unit for converting the received current signals converted by the first and second optical receiver diodes into voltage signals, digitizing the voltage signals into digital signals, and providing the digital signals as received, serial n-bit channel data and a recovered clock signal, detecting transmission loss in the received signals from the voltage signals, encoding the first and second transmission loss signals as the encoded transmission loss signal, and outputting the encoded transmission loss as the error detection signal;

a second PLL for generating a second synchronized clock signal synchronized with the recovered clock signal; and

a data recovery unit for recovering the received recovered serial n-bit channel data to n-bit parallel data in response to the second synchronized clock signal;

11. (currently amended) The optical transmission system of claim 10, wherein the error detection unit ~~optical receiver~~ comprises:

first and second ~~optical~~ signal receivers for converting the current signals converted by the plurality of first and second optical receiver diodes into voltage signals, outputting the voltage signals, digitizing the voltage signals into the digital signals, and providing the digital signals as the received serial n-bit channel data and the recovered clock signal;

a transmission ~~loss~~ error detector for detecting the transmission loss in the received signals from the voltage signals, and encoding the first and second transmission loss signals in response to the second synchronized clock signal.

12. (currently amended) A transmitting apparatus for receiving transmission loss data detected by an external receiving apparatus through a ~~first~~ return optical fiber and transmitting a plurality of channel data and a clock signal to the receiving apparatus through [[a]] first and second transmission optical fibers, comprising:

a PLL for generating a clock signal synchronized with a predetermined clock signal received from an external source;

a parallel/serial data converter for receiving a plurality of n-bit channel data from an external source in response to the synchronized clock signal and serializing the n-bit channel data in response to the synchronized clock signal;

a receiver optical diode for receiving and converting an error detection signal transmitted from the ~~first~~ return optical fiber into an error detection current signal;

an error compensating ~~optical~~ driver for converting the n-bit channel data serialized by the parallel/serial data converter and the synchronized clock signal into first and second current signals respectively, converting the error detection current signal into a digital error compensation signal, decoding first and second transmission loss compensation signals from the digital error compensation signal, modulating the magnitudes of the converted first and second current signals in accordance with the corresponding first and second transmission loss compensation signals, and outputting the modulated first and second current signals as first and second driving signals; and

first and second transmitting optical diodes for outputting first and second optical signals having optical output powers corresponding to the first and second driving signals through the first and second transmission optical fibers.

13. (currently amended) The optical transmission system of claim 12, wherein the error compensating ~~optical~~ driver comprises:

an ~~optical~~ error detection receiver for receiving the error detection current signal and converting the received error detection current signal into a digitized error compensation signal;

a transmission ~~loss~~ error compensator for recovering first and second transmission loss data signals corresponding to the transmission loss occurring in the transmission of the first and second optical signals from the error compensation signal in response to the synchronized clock signal, analog converting the recovered first and second transmission loss data signals to provide the first and second transmission loss compensation signals; and

a plurality of ~~optical~~ signal drivers for converting the serialized n-bit channel data and the first synchronized clock signal into the first and second current signals, modulating the magnitudes of the converted first and second current signals in response to the corresponding first and second transmission loss compensation signals, and outputting the modulated first and second current signals as the first and second driving signals.

14. (currently amended) The transmitting apparatus of claim 13, wherein the error compensating ~~optical~~ driver further comprises an ~~optical~~ output controller that changes modulation currents of the first and second driving signals in response to the first and second transmission loss compensation signals.

15. (currently amended) The transmitting apparatus of claim 13, wherein the error compensating ~~optical~~ driver further comprises an ~~optical~~ output power controller that changes bias currents of the first and second driving signals in response to the first and second transmission loss compensation signals.

16. (currently amended) The transmitting apparatus of claim 13, wherein the transmission ~~loss~~ error compensator comprises:

a decoder for decoding the first and second transmission loss compensation signals from the ~~digital~~ error detection receiver to recover the transmission loss data of each corresponding first and second transmission channel; and

a digital-to-analog converter for receiving the first and second transmission loss compensation signals data of each channel, converting the transmission loss data into first and second analog signals, and providing the first and second analog signals as the first and transmission loss compensation signals.

17-20. (canceled)

21-24. (canceled)

Amendments to the Drawings:

The attached sheets of drawings include changes to FIGs 2, 11, and 13. The sheets, which include FIGs. 2, 11, and 13, replace the original sheets. Element 160 of FIG. 2 is amended to replace "ERROR COMPENSATING OPTICAL DRIVER" with "ERROR COMPENSATING DRIVER." Element 210 of FIG. 2 is amended to replace "ERROR DETECTION OPTICAL DRIVER" with "ERROR DETECTION UNIT." Element 162 of FIG. 11 is amended to replace "OPTICAL RECEIVER" with "ERROR DETECTION SIGNAL RECEIVER." Element 164 of FIG. 11 is amended to replace "TRANSMISSION LOSS COMPENSATOR" with "TRANSMISSION ERROR COMPENSATOR." Element 166 of FIG. 11 is amended to replace "OPTICAL OUTPUT POWER CONTROLLER" with "OUTPUT POWER CONTROLLER." Element 168 of FIG. 11 is amended to replace "FIRST OPTICAL DRIVER" with "FIRST SIGNAL DRIVER." Element 170 of FIG. 11 is amended to replace "SECOND OPTICAL DRIVER" with "SECOND SIGNAL DRIVER." Element 172 of FIG. 11 is amended to replace "THIRD OPTICAL DRIVER" with "THIRD SIGNAL DRIVER." Element 174 of FIG. 11 is amended to replace "FOURTH OPTICAL DRIVER" with "FOURTH SIGNAL DRIVER." Element 176 of FIG. 11 is amended to replace "FIFTH OPTICAL DRIVER" with "FIFTH SIGNAL DRIVER." Reference numeral "160" is added to FIG. 11. Element 212 of FIG. 13 is amended to replace "FIRST OPTICAL RECEIVER" with "FIRST SIGNAL RECEIVER." Element 214 of FIG. 13 is amended to replace "SECOND OPTICAL RECEIVER" with "SECOND SIGNAL RECEIVER." Element 216 of FIG. 13 is amended to replace "THIRD OPTICAL RECEIVER" with "THIRD SIGNAL RECEIVER." Element 218 of FIG. 13 is amended to replace "FOURTH OPTICAL RECEIVER" with "FOURTH SIGNAL RECEIVER." Element 220 of FIG. 13 is amended to replace "FIFTH OPTICAL RECEIVER" with "FIFTH SIGNAL RECEIVER." Element 224 of FIG. 13 is amended to replace "OPTICAL DRIVER" with "ERROR DETECTION SIGNAL DRIVER." Reference numeral "210" is added to FIG. 13.

Formal FIG. 1 is also attached hereto to replace previously submitted informal FIG. 1 as submitted on March 23, 2004.

A marked-up version of the drawings, with revisions shown in red, is included with the amended drawings. Entry of the amended drawings is respectfully requested.

Attachment: Replacement Sheets - FIGs. 1, 2, 11, and 13
Annotated Sheets Showing Changes